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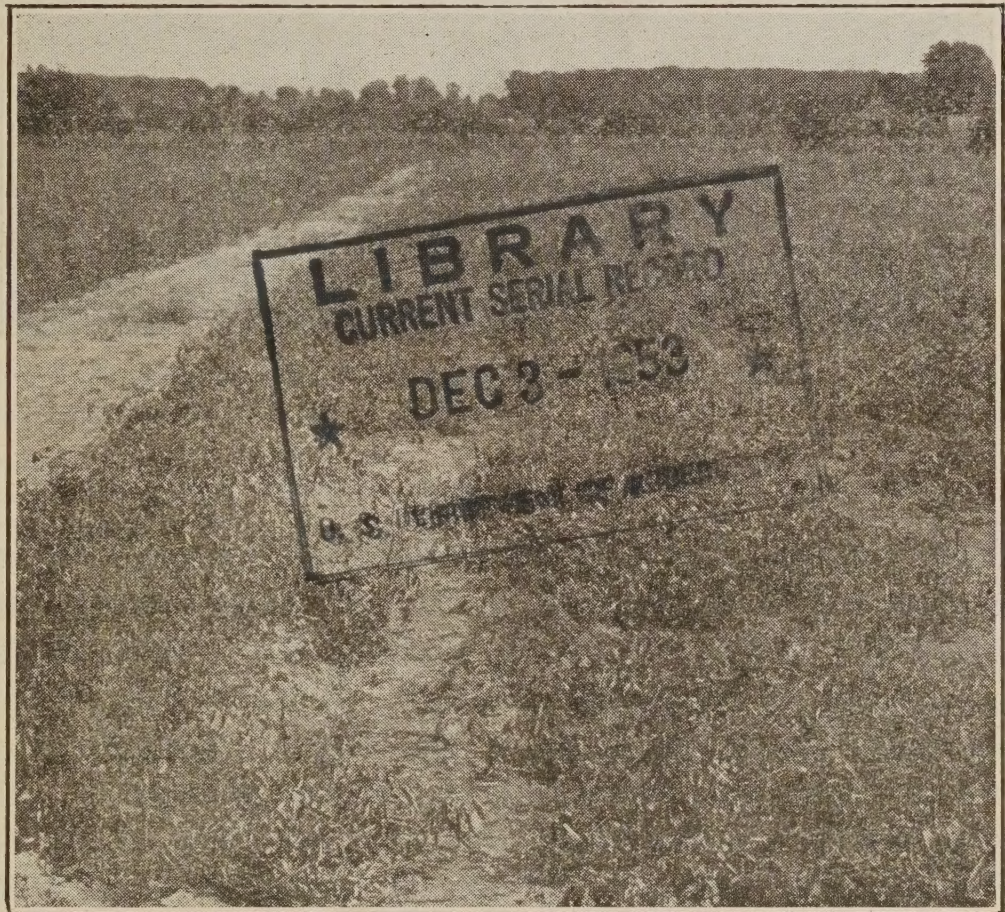
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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY

OFFICE OF COTTON, TRUCK, AND FORAGE CROP DISEASES
WASHINGTON, D. C.

The Control of Tomato Leaf-Spot
PREVENT THE DISEASE BY SPRAYING



A field of tomatoes, showing the effect of spraying.



A field of tomatoes, showing the effect of failure to spray.

NEW PUBLICATIONS ON TRUCK-CROP DISEASES.

The following new publications of the Department of Agriculture are intended to help control truck and garden crop diseases: "Watermelon Diseases," Farmers' Bulletin 821; "How to Increase the Potato Crop by Spraying," Farmers' Bulletin 868; "Control of Diseases and Insect Enemies of the Home Vegetable Garden," Farmers' Bulletin 856; "Powdery Dry-Rot of Potato," C., T., & F. C. D. Circular 1; "Potato Black-Heart," C., T., & F. C. D. Circular 2; "Selection and Treatment of Seed Potatoes to Avoid Diseases," C., T., & F. C. D. Circular 3.

THE CONTROL OF TOMATO LEAF-SPOT.¹

INCREASE PRODUCTION BY CONTROL OF DISEASE.

LOSSES OF MILLIONS OF DOLLARS IN THE TOMATO CROP ARE PREVENTABLE—HOW TO CONTROL LEAF-SPOT.

TOMATO LEAF-SPOT, or blight, is a troublesome disease, causing an average annual loss of several millions of dollars in the Mississippi Valley and Atlantic Coast States, a large part of which may be avoided. The disease is distinguished by small, circular spots having gray centers and dark-colored margins and by bare stems with tufts of green leaves at their tips. It is caused by a parasitic fungus, which lives over winter on old tomato vines and leaves, and spreads by means of small reproductive bodies called spores. Although little is usually done to prevent leaf-spot, it may be satisfactorily controlled by the measures herein described.

PREVENTIVE MEASURES.

Plow well under all old, diseased vines and leaves, to hinder the development and dissemination of spores. Cultivate and harvest the crop when the plants are dry, as the spore masses when wet by dew or rain are readily picked up by machinery and men's hands and clothing and scattered over the field. Shortly before, or even when the disease spots first appear, spray the plants with soap Bordeaux mixture to prevent infection.

Spraying preserves the foliage, increases the yield, and improves the quality of the fruit. Moreover, it prevents much ripe-rot and sun scald, which frequently affect the fruit of defoliated plants.

THE PREPARATION OF SPRAY MIXTURE.

The 4-2-3-50 soap Bordeaux mixture used to spray tomatoes has the following composition:

| | |
|-----------------------------------|-------------|
| Copper sulphate (bluestone) | 4 pounds. |
| Quicklime (stone lime) | 2 pounds. |
| Resin-fishoil soap | 3 pounds. |
| Water to make | 50 gallons. |

When a considerable amount of spraying is to be done, much time may be saved by preparing the following stock solutions:

In a barrel marked to contain 40 gallons, suspend 40 pounds of copper sulphate (in a gunny sack) so that only a part of the crystals dip into the water, of which there should be 30 to 35 gallons. The crystals will dissolve over night without further attention. When all are in solution, remove the gunny sack and add water to the 40-gallon mark, stirring thoroughly. In another barrel slake 20 pounds of stone lime by adding small quantities of water at intervals until the lime has all crumbled, then add sufficient water to make 20 gallons, stirring thoroughly. In a third barrel make up a soap suspension containing 30 pounds of resin-fishoil soap and enough water to make 30 gallons. Prepare the soap by stirring it in warm water until thoroughly mixed and adding enough water to make 30 gallons of suspension. Each of these stock barrels will contain 1 pound of chemical in each gallon of liquid. They will make enough spray mixture to spray about five acres of tomatoes.

When ready to spray, stir each concentrated solution thoroughly and combine them as follows: Pour 2 gallons of lime milk into the

¹ The experiments on which these directions are based were made in cooperation with the New Jersey and Maryland Agricultural Experiment Stations.

spray tank and dilute it with 41 gallons of water. When thoroughly mixed, add 4 gallons of copper-sulphate solution and stir the mixture well. Then add 3 gallons of soap suspension and stir it again. With this method of mixing the materials no further stirring will be necessary except that given by the spray-tank agitator. For a spray machine having a 100-gallon tank, use double the quantities here stated.

As coarse particles frequently clog the spray nozzles, all ingredients should be strained into the spray tank through a brass or bronze strainer with 18 meshes to the inch or through two or three thicknesses of cheesecloth.

Where one expects to spray a small area that will require 50 gallons or less of the mixture, it may be found more convenient to omit the preparation of the stock solutions and weigh out the ingredients each time spraying is to be done. In such cases each should be prepared separately with portions of the total amount of water that will be needed; then mixed as already described. Only fresh Bordeaux should be used, as it becomes less effective when allowed to stand.

APPLICATION OF THE SPRAY.

As an early application greatly reduces the opportunities of the disease to obtain a start, the ideal time to begin spraying is about ten days to two weeks before the disease appears in the field. Although good control may be obtained by beginning when the disease first appears on the plants, it requires a larger number of applications.

Spraying twice at intervals of one week and three times at intervals of ten days is usually sufficient, but if this fails to give satisfactory control, or if the disease is likely to spread from neighboring fields, a sixth application should be given.

Not only the time and frequency of spraying, but also the means of doing it are important. For all work on an acreage basis, a spray machine is necessary. It matters little whether it is a power sprayer or a traction sprayer so long as it meets certain requirements. It should have strainer nozzles, and sufficient power to discharge 100 or more gallons of liquid to the acre at a pressure of 125 to 150 pounds. If the sprayer in use does not discharge at this rate, it should be run over the field twice. It should also have at least three nozzles for each row; one above, directing the spray downward, and one at each side, directing the spray toward the plants. Some means should also be provided for setting the side nozzles at convenient distances from the plants and for directing the spray obliquely upward, as this helps to spray the lower surfaces of the leaves and gives them greater protection against the disease.

For spraying to continue throughout the season the rows should be about 5 feet apart. By placing the plants 3 feet 3 inches apart in the rows, practically the same number of plants can be set per acre as when the plants are set 4 by 4 feet.

Approved:

WM. A. TAYLOR,
Chief of Bureau.

June 1, 1918.

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W. B. CLARK.